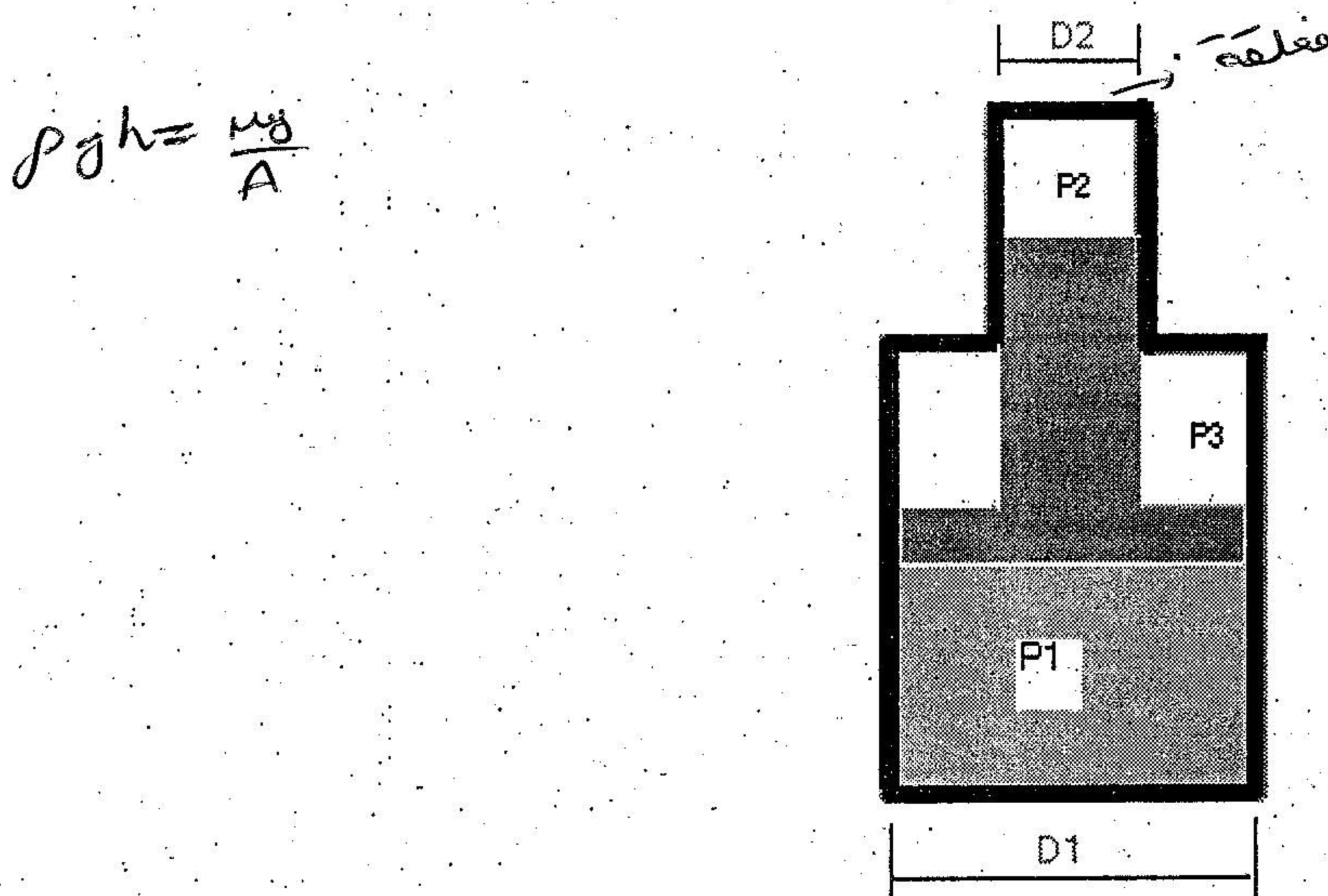
بسم الله الرحمن الرحيم

Specialization	Engineering	السلطة الوطنية الفلسطينية وزارة التربية والتعليم العالي MINISTRY OF EDUCATION & HIGHER EDUCATION جامعة فلسطين التقنية طولكرم "خضوري"
Course Name :	Engineering Thermodynamics	
Date :	4-1-2011[redacted]	
Time :	120 minutes	Final Exam 2010-2011 1st semester 2010-2011
Name : --------------------		Section :--------------------

Q1: a- Define the following: *(4 marks)*

Constant pressure specific heat, Isochoric processes, Ideal gas, Adiabatic process

b- For the cylinder shown, $D_1 = 8$ cm, $D_2 = 5$ cm, $P_1 = 1050$ kpa, $P_2 = 1400$ kpa. Determine the pressure in chamber 3. *(6 marks)*



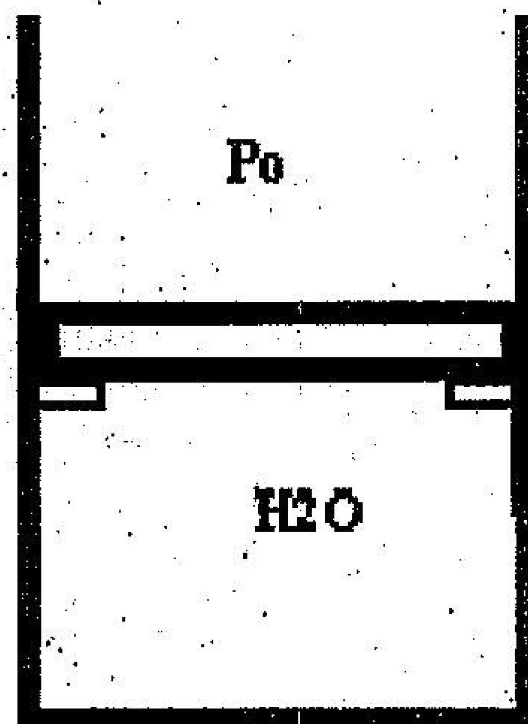
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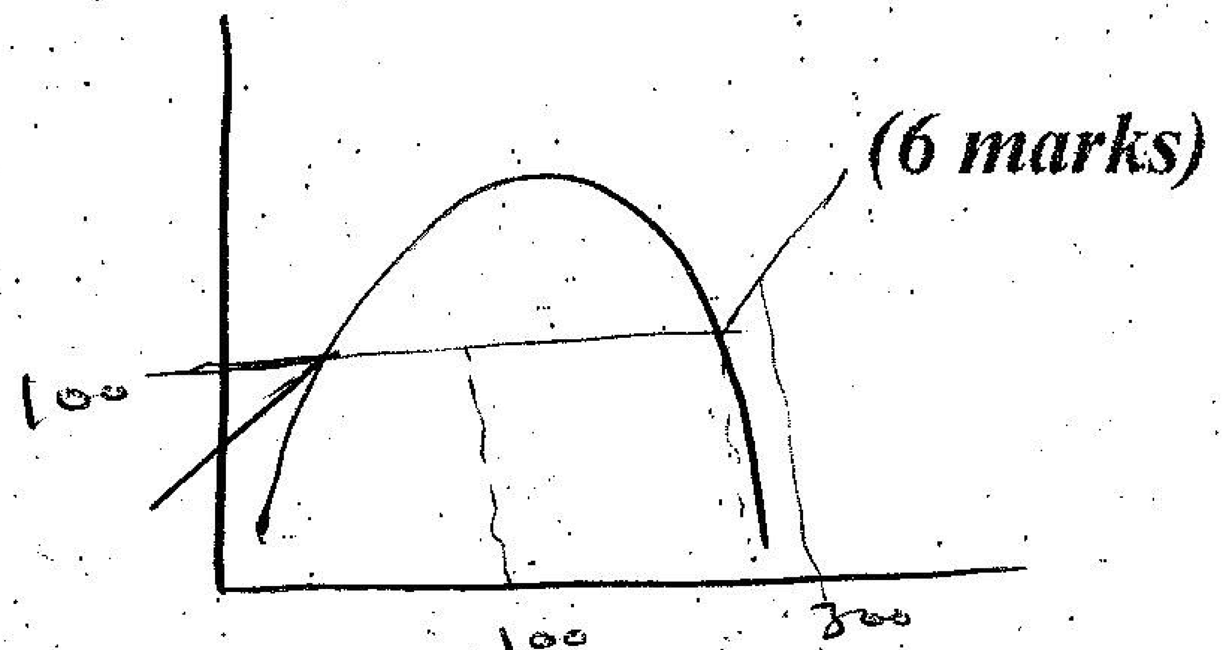
تم الرفع بواسطة م.معن أبو عيسى

Q2 : a- What are the difference between point and path functions, give one example on each. *(4 marks)*

b- A gas initially at 1 MPa, 500 C^0 is contained in a piston and cylinder arrangement with an initial volume of $0.1\ m^3$. The gas is then slowly expanded according to the relation $PV =$ constant until a final pressure of 100 kPa is reached. Determine the work for this process *(6 marks)*

Q3: a- A piston cylinder setup contains 0.1 kg saturated mixture water at 100 kPa with quality 25%. The mass of the piston and atmospheric pressure is such that a pressure of 500 kPa will float it. The water is heated to 300C^0. Find the final pressure, volume and the work.

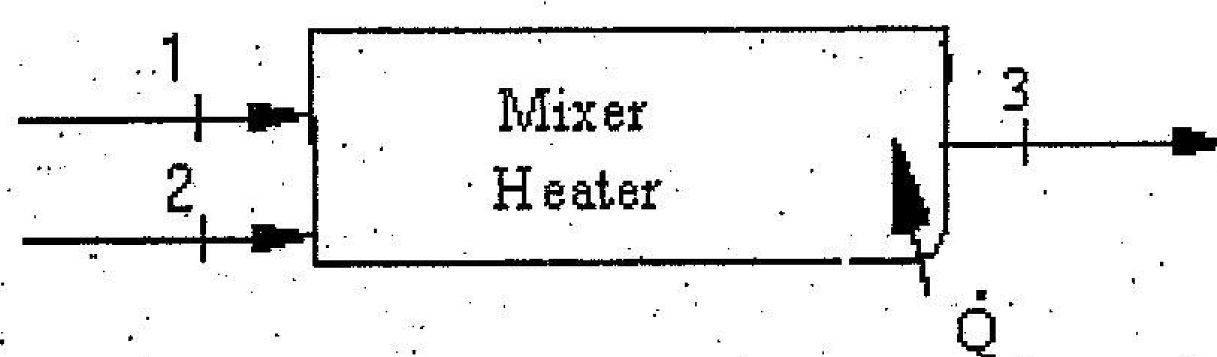




(6 marks)

b- Compressed liquid R-22 at 1.5 MPa, 10 ^{0}C is mixed in a steady-state, steady-flow process with saturated vapor R-22 at 1.5 MPa. Both flow rates are 0.1 kg/s, and the exiting flow is at 1.2 MPa and a quality of 85%. Find the rate of heat transfer to the mixing chamber.

(6 marks)



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Q4- A 250-L rigid tank contains methane gas at 500 C^0, 600 kPa. The tank is cooled to 300 K , assuming ideal gas

a. Find the final pressure

b- The heat transfer for the process. Using expression for C_p from tables

b. What is the percent error in the heat transfer if the specific heat is assumed constant at the room temperature value?

(8 marks)

Good Luck

E. Mhanna Ebaid